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ORIGINAL ARTICLE

Cervicogenic Headache among Young Adults Using Computers with more than 3 Hours of Screen Time

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ABSTRACT

Background: Cervicogenic headache is a type of headache characterized by chronic hemi cranial pain referred to the head from either the cervical spine or soft tissues within the neck. The main symptoms of cervicogenic headaches include pain originating in the neck that can travel to the head or face, headaches that get worse with neck movement, and limited ability to move the neck.

Aims and Objectives: This study focused to find out the prevalence of cervicogenic headache among young adults using computers with more than 3 hours of screen time**.**

Material and Methodology: This was a cross-sectional study in which 189 freelancers and entrepreneurs were selected through convenient sampling from private computer institutes of Faisalabad after meeting inclusion exclusion criteria. After sample selection, data was collected through a questionnaire based on Cervicogenic Headache International Study Group (CGHISG) diagnostic criteria.

Result: The results of this study showed that cervicogenic headache was prevalent among digital freelancers and entrepreneurs. Data was analyzed by SPSS version 16. Cervicogenic Headache was labeled in 122 (64.5%) people using computer at work or at home for more than 3 hours screen time daily. there was the significant association between cervicogenic headache and working ergonomics of digital freelancers and entrepreneurs with P value less than 0.05.

Conclusion: Long working hours in front of a screen could expose freelancers and entrepreneurs to headache and neck pain. There is a considerable prevalence of cervicogenic headache among digital freelancers and entrepreneurs. The greatest cause of cervicogenic headache is a bad posture.

Keywords: Cervicogenic headache, Posture, Secondary headaches. Neck pain

INTRODUCTION

Use of personal computers has increased the work productivity, but on the other hand, extravagant use can lead to musculoskeletal pain, visual impairment, headaches, and other symptoms. Of these complaints, the most common is a headache.[1]

Posture is the way your muscles and bones keep your body upright. It refers to rectifying and maintaining parts of the body in specific positions.[2] Optimal posture imparts biomechanically balanced body part orientation. By using muscles very productively, low energy consumption, and minimal pressure on the joints can sustain an upright posture. The American Academy of Orthopedic Physicians (AAOS) defines good posture as a state of muscular and skeletal balance that protects the structure of the body from injury or progressive deformity.[3]

Posture is the result of static and dynamic components. A static pose consists of the alignment of parts of the body to maintain a selected position in the space. Dynamic posture emphasizes the ability to properly control and maintain a well-aligned upright posture while moving the body.[4] Forward head posture is an example of a postural disturbance.

Headache occasionally can be problematic to label, but some usual indicators include excruciating, squeezing, persistent, relentless, or recurrent. Headache may rise impulsively or may be linked with movement or workout. Headache is one of the utmost common ailments of the nervous system and numerous of its subtypes— migraine, cluster headache, tension-type headache, and cervicogenic headache. There are three major categories of headaches based upon the source of the pain.[5]

"Cervicogenic headache is a type of pain that originates in the neck, although a person will feel pain in the head. Secondary headaches included cervicogenic headaches. Secondary headaches are induced by intrinsic conditions, such as acute high blood pressure, neck injuries, or infections. This distinguishes them from major headaches such as migraine and cluster headaches.[6]

Cervicogenic headache is prevalent amongst chronic headaches, but it is nearly always overlooked, whereas early finding and handling can decrease the expensive treatment and disability that escorts this challenging disorder.[7]

In 2009, a cross-sectional study was conducted to see the impact of computer use on neck pain and headache. This study concluded that a concerning co-relation between neck pain and long-time computer usage for school students, and had established the necessity to instruct new computer users about proper ergonomics and postural health. Worldwide, the percentage of the grown-up population with a headache disorder is 47% for headache overall.[8]

The aim of this study is to observe the prevalence of cervicogenic headache among digital freelancers and to see how cervicogenic headaches affect the life and work efficiency of computer users.

MATERIAL AND METHODS

In this cross-sectional study, freelancers and entrepreneurs of private computer institutes in Faisalabad were included. Duration of study was 4 months from March 2020 to July 2020. The main share of this time was consumed on the data collection procedure.

According to the parent article and after the approval of proficient statisticians, the sample size of 258 was selected after meeting the inclusion criteria and exclusion criteria. All the participants signed the informed consent form, which explained the purpose and limitations of the study. Cervicogenic headache is a kind of pain that initiates in the neck; however an individual will feel pain in the head. An individual who provides different services on online and digital freelance platforms on hourly or project-based rates is called a digital freelancer. An individual who sells his various products on an online e-commerce marketplace without having any physical shop and brand is called a digital entrepreneur.

In this study, convenient sampling was used to select the data. An Online Google survey form was used to distribute the consent form and questionnaire through emails to all the freelancers and entrepreneurs of private computer institutes in

Faisalabad. Participants were educated about the purpose of the study through the description section of the Google forms.

Data were collected using the following tools: -

i. Consent Form
ii. Socio-demographic Questionnaire
iii. Cervicogenic Headache International Study Group (CGHIS) criteria
iv. Numeric Pain Scale

Selection Criteria

Inclusion Criteria

- Age between 16-35 years
- History of use of desktop ot laptop for more than 3 hours daily
- Screen time more than 3 hours daily
- Frequent episodes of headache in the past month

Exclusion Criteria

- Subjects with any systematic illness
- Participants with any prior history of spinal trauma
- Any past history of spinal tumor
- Any prior history of whiplash injury
- Subjects with a pre-diagnosed psychological condition.'
- Any prior spinal surgery

All the collected data for this study was to determine the prevalence and impact of cervicogenic headache on daily work among freelancers. A convenient sampling technique was used for this study. After the collection of 301 samples, 15% of data was excluded based on inclusion criteria and exclusion criteria. One hundred six males and 152 females were selected for this study after meeting the inclusion and exclusion criteria.

A brief informed consent form was also included with the questionnaire, which explained the purpose of the study and permission to include the individual's personal data in the study. All participants signed the informed consent form before filling the questionnaire, and no one was forced to take part in this study. A socio-demographic questionnaire was included to find out basic demographic information about every client. Questionnaire-based on inclusion and exclusion criteria used for the selection of participants. A questionnaire-based on International Headache disorder Classification (ICHD-3) and Cervicogenic headache international study groups criterion was used to collect the data about the cervicogenic headache of each participant. The supervisor and co-supervisor approved all questionnaires. The validity and reliability of the

questionnaire were examined by conducting a pilot study. The main purpose of the study was to see the prevalence and impact of cervicogenic headache in freelancers.

Statistical Package for the Social Sciences (SPSS) version 17.0 was used to analyze the data. In this study, cervicogenic headache was used as a dependent variable, and age, occupation, posture, functional status, and screen hours were used as an independent variable. Frequency distribution of descriptive analysis was used to evaluate the presence of each response and percentage of the data. Prevalence was calculated mean and standard deviation in the frequency distribution. A Cross-tabulation test was used to evaluate the relationship between variables, while the chi-square test was used to build the association between variables. For the ease and application of statistical tests, all the data was transformed into numerical values after data collection to analyze and find out the significance of the study.

There were various problems that were confronted during data collection. Due to the COVID-19 pandemic situation and lockdown in various areas, an online survey had to be done. Some of the participants were non-cooperative.

A brief informed consent form was included in the online survey, which explained the purpose, limitations, and permissions related to the study. All participants signed the consent before filling the questionnaire. Participants filled the questionnaire willingly, and no one was enforced to take part in this study. The questionnaire was purely related to research, and all the personal information was kept secret. Confediantely was the main clause of the consent form, and all the information given by the participants was kept confidential. No discernment has happened during data collection, and proper time was given to all participants to fill the questionnaire. There was no breach in confediantely, and all the communication was done honesty and transparency. For any reason, any participant was allowed to leave the study at any point without any prior explanation.

RESULTS

SPSS software version 20.0 was used to apply statistical tests, bar charts, and tables to analyze the data. The occurrence of responses was checked through frequency distribution, while the association between different variables were checked through cross-tabulation. Data was collected from 189 participants from private computer institutes of Faisalabad. All the participants were clearly instructed about the nature of the study, and a consent form was signed as proof of their acceptance to participate in the study without any biases. All participants enrolled in this study fulfilled the selection criteria of this study.

Analysis of data showed that out of a total of 189 participants, 113 (59.8%) were females participants, while 76 (40.2%) were male participants. The age of the participants was divided into three categories. 150 (79.6%) participants were 16 years to 25 years old. 30 (15.9%) participants were 26 years to 35 years old, while 8 (4.5 %) participants were 36 years to 45 years old. Among these 189 participants, 44 (23.3 %) were using a computer screen for 3 to 4 hours daily. Fifty-nine participants (31.2 %) were using a computer for five to 6 hours daily. While 86 participants (45.5 %) were using a computer screen for more than 6 hours daily.

90		
80		
70		
60		
50		
		86
40		
	59	
30		
44		
20		
10		
0		
3-4 hrs	5-6 hrs	more than 6 hr

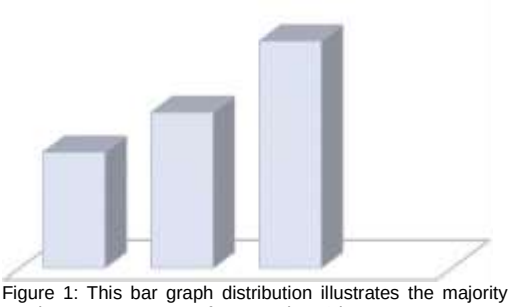

Figure 1: This bar graph distribution illustrates the majority of participants used a computer screen for more than 6 hours.

Data analysis showed that neck pain and headache while working was seen in 148 participants (78.3 %); 29 participants reported mild intensity of pain, 99 participants (52.4 %) reported moderate intensity of pain while 61 participants (32.3 %) reported severe level of neck pain and headache.

Relation of neck movement with intenity of pain was analysied, 54 participants (28.6%) reported no effect of neck movements on headache and pain, while 134 participants (70.8 %) reported that there is an effect of neck movements on headache and pain.

Table 1: Frequency distribution of the location of pain

Location of pain	Frequency	Percent
A unilateral headache starts from		
the neck and unilateral eye	141	74.6 %
socket pain		
Headache involving both front	18	9.5 %
and backside		
Forehead, one side of the head,	30	15.9 %
and around the eyes		
Total	189	100.0 %

Table 2: showing the frequency distribution of Nature of Pain

Pain Nature	Frequency	Percent
Persistent, deep pain,		
originating from the neck	133	70.4 %
Sharp needle-like pain with		
painful nodes	27	14.3 %
Throbbing and pulsating		
headache	29	15.3%
Total	189	100.0 %

Data analysis shows that 53.4 % of participants complained about neck stiffness during daily activity, especially while doing freelancing work, and 46.6 % of participants reported no complaints of neck stiffness during work. 141 participants complained about decreased mobility in the neck region while 48 participants reported normal mobility in the neck area.

Cervicogenic Headache was labeled in 122 (64.5%) people using computer at work or at home for more than 3 hours screen time daily.

Table 3: showing the frequency of Cervicogenic headache observed in our study

Cervicogenic headache	Frequency	Percent
Yes	122	64.5
No	67	35.4

Data analysis was done to determine the association between gender and different occupation of participants. Out of total 81 male participants, 45 were freelancers while the other 36 male participants were entrepreneurs, and out of 108 female participants, 79 were freelancers while 29 were digital entrepreneurs. So, there was a total of 124 freelancers, including male and female participants, while 65 participants were entrepreneurs. (p value= 0.012, which means a significant association between gender and occupation of participants.)

Data analysis to determine the association between gender and daily screen hours among participants showed that out of total 81 male participants, 13 participants use the screen for 3 to 4 hours, 34 participants use screen 4 to 5 hours while the remaining 34 participants use the screen for more than six hours daily. Out of 108 female participants, 26 participants use the screen for 3 to 4 hours, 27 participants use the screen 4 to 5 hours, while the remaining 54 participants use the screen for more than six hours daily.(p value= 0.041, which means a significant association between gender and daily screen hours of participants.)

Association between gender and pain intensity among participants was demonstrated that out of a total of 189 participants, 29 reported mild pain of intensity (1-3). In these 29 participants, 22 participants were male, while 7 participants were female. Ninety-nine participants reported moderate pain of intensity (4-7); in these 99 participants, 43 were male, while 56 participants were females. While out of 189 participants, 61 participants reported severe pain. In these 61 participants, 16 were male participants, and 45 were female participants. (p value= 0.00, which means a significant association between gender and intensity of pain among participants of this research.)

Table 4 represents statistical analysis and association between cervicogenic headache and working posture during daily work activity among freelancers and entrepreneurs. Out of a total of 189 participants, 41 participants reported lying posture while working. In these 41 participants, 34 participants had cervicogenic headaches while 7 participants were clear. Forty-eight participants reported that they usually sit on the bed without any back support while working. In these 48 participants, 40 had cervicogenic headaches while 8 participants were clear. Sixty-three participants reported that they sit on a chair or sofa with proper back support while working. While out of 189 participants, 37 participants reported that they use specially designed, height-adjustable chairs and tables, which are ergonomic in nature. (p value= 0.00, which means that there is a significant association between gender and posture while working among freelancers and entrepreneurs.)

Table no. 4: showing association of cervicogenic headache with posture while using computer Association of cervicogenic headache with posture while using computer

			Posture while using computer			
			Sitting on the bed without any back support	Sitting on chair/sofa with back support	Especially designed height-adjustable chair/table	Total
Prevalence of Cervicogenic Headache	Yes	34	40	40	8	122
	No	7	8	23	29	67
Total		41	48	63	37	189

P value: 0.012

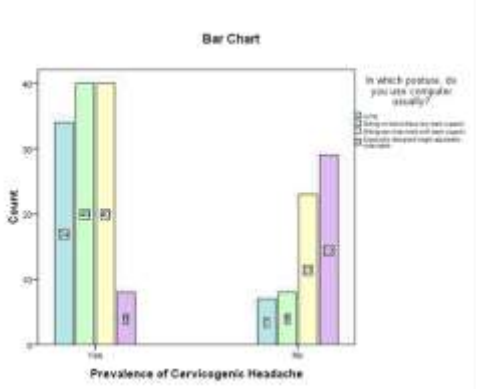

Figure 2: This bar graph illustrated the association of cervicogenic headache with working positions among freelancers and entrepreneurs.

DISCUSSION

This study focused on evaluating, recognize, and explain the prevalence of cervicogenic headache and association of pain and subjective decrease in neck mobility among freelancers and entrepreneurs. This study evaluated the different symptoms which were based on the diagnostic criteria of the Cervicogenic Headache International Study Group (CEHISG). The present study manifested that unilateral headache and neck pain, persistent deep pain in nature, and decreased subjective neck mobility are the most common features among participants of freelancers and entrepreneurs.

This current study concluded that the prevalence of cervicogenic headache was 64.5% among freelancers and entrepreneurs. This finding is supported by other published articles such as a study article to evaluate the prevalence of cervicogenic headache, reported the prevalence of 69 % of cervicogenic headache[9] This finding is near the value of the current study.

Another study on the prevalence of cervicogenic headaches concluded that 17.8 % of participants were suffering from cervicogenic headaches.[10] The reason for this low value as compared to this current study is the difference in population among these two research papers.

This study evaluated the prevalence and frequency of neck pain and headache while working among digital freelancers and entrepreneurs. The results of this study showed that 78.3

of participants reported neck pain and headache while working. These results are supported by another study article on the Prevalence of work-related neck pain among computer operators. This study described that frequency of neck pain among computer users was 67.3 %, which is near-value to the findings of this research.[11]

Hence, it is confirmed with the support of published articles that neck pain and headache are prevalent among participants who use computers and other screens, such as digital freelancers and entrepreneurs.

Our study demonstrated that there was a significant association between gender and intensity of neck pain and headache among participants as more female participants reported moderate intensity and severe intensity of pain as compared to the male participants with the P-value of 0.00. This finding is supported by another study published in 2019 by Mahin Khilji et al.[12], which evaluated the frequency of cervicogenic headache among students of medical

college. This study also stated that the frequency of female participants suffering from cervicogenic headaches is higher than male participants with a P-value of 0.02 of significance.

Another systemic review of cervicogenic headaches also supported this gender-oriented significance among patients suffering from cervicogenic headaches.[13]

Our study demonstrated that there was a decrease in subjective neck mobility among participants from freelancers and the entrepreneur's population. About 57 % of participants reported a decrease in neck mobility while working. This study also explained the significant majority reported the stiffness in neck muscle among the population. This fact is confirmed by another study by Seung Kyu Park, which analyzed the mechanical properties of cervical muscles in patients with cervicogenic headaches. This study compared the specifications of upper neck muscles. This study showed the results of a significant association between tone and stiffness of neck muscles among participants with cervicogenic headache.[14]

This study also demonstrated the significant association between cervicogenic headache and working postures among freelancers and entrepreneurs. The significance level of 0.00 among working positions and cervicogenic headache is depicted in this study. This finding is supported by another study article. The study article evaluated the prevalence and risk factors of cervicogenic headaches among computer users. This study evaluated the association between cervicogenic headache and working postures and positions among computer users, and a significance level of 0.0001 was calculated in the article. Hence, the findings of this research are supported by other published articles.

CONCLUSION

Long working hours in front of a screen could expose freelancers and entrepreneurs to headache and neck pain. There is a considerable prevalence of cervicogenic headache among digital freelancers and entrepreneurs. The greatest cause of cervicogenic headache is a bad posture.

Limitation of the study: This study evaluated and demonstrated the prevalence of cervicogenic headache among digital freelancers and entrepreneurs. These are some limitations of this study

There was limited access to the population due to the COVID-19 pandemic and lockdown situation in some areas, so data collection was difficult.

There was limited for the study.

In this study, some individuals showed less interest in filling the online survey form, and some individuals filled it incompletely. These individuals were excluded from the study.

The participants have less knowledge about medical terminologies, so the explanation of each and every part of the questionnaire also made this procedure lengthy.

This study was conducted among freelancers and entrepreneurs of Faisalabad, which

makes this study limited.

Recommendations: This study concluded that there was a significant prevalence of cervicogenic headache among digital freelancers and entrepreneurs. This study also demonstrated the decrease in quality of life and effectiveness of work due to a decrease in neck mobility and neck stiffness. There is a significant association between cervicogenic headache and ergonomic working posture among freelancers and entrepreneurs. There are some recommendations to avoid cervicogenic headache and other associated symptoms.

There is a need to pay more attention to the proper education about working posture and ergonomics during work.

Proper sessions/workshops should be arranged to educate the freelancers and entrepreneurs about causative factors of cervicogenic headache and to teach them how to avoid it,

Long duration screen time during work is strongly associated with cervicogenic headache, so there should be proper work-rest intervals to avoid the occurrence of cervicogenic headache.

Specially designed ergonomic work stations should be recommended to digital freelancers and entrepreneurs.

REFERENCES

1. Lee JW, Cho HG, Moon BY, Kim SY, Yu DS. Effects of prolonged continuous computer gaming on physical and ocular symptoms and binocular vision functions in young healthy individuals. Peer J. 2019;7:e7050. Published 2019 Jun 4. doi:10.7717/peerj.7050
2. Rosario J L. What is Posture? A Review of the Literature in Search of a Definition. EC Orthopaedics, 2017;6, 111-133.
3. Collins, C. K., Johnson, V. S., Godwin, E. M., & Pappas, E. (2016). The reliability and validity of the Saliba Postural Classification System. The Journal of manual & manipulative therapy, 24(3), 174-181. doi:10.1080/10669817.2016.1138599
4. Andrew Guccione RW, Avers D. Impaired Posture GERIATRIC PHYSICAL THERAPY (2018). (FOURTH ed., pp. 292).
5. Al Khalili Y, Ly N, Murphy PB. Cervicogenic Headache. [Updated 2021 Mar 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK507862/
6. Rubio-Ochoa, J., Benítez-Martínez, J., Lluch, E., Santacruz-Zaragozá, S., Gómez-Contreras, P., & Cook, C. E. (2016). Physical examination tests for screening and diagnosis of cervicogenic
7. headache: A systematic review. Manual Therapy, 21, 35-40. doi:https://doi.org/10.1016/j.math.2015.09.008
8. Saberi, A., Bakhshayesh Eghbali, B., Kazemnezhad, E., Hosseininezhad, M., & Mahdavi, F. (2014). Prevalence of Cervicogenic Headache and Associated Factors among the Patients with Chronic Headache. [در مبتالیان به سردرد مزمن smug]. هرمه لماوع و ک ینزوک یورس دردرس عوو ش-med, 23(89), 74-82.
9. Jensen, R., & Stovner, L. J. (2008). Epidemiology and comorbidity of headache. The Lancet Neurology, 7(4), 354-361. doi: https://doi.org/10.1016/S1474-4422(08)70062-0
10. Afzal, F., Atif, M. M., Kumar, A., Rasul, A., Islam, A., & Nadeem, I. (2020b). Cervicogenic headache and neck pain among computer users. Rawal Medical Journal, 45(2), 370-372.
11. Nilsson, N. (1995). The prevalence of cervicogenic headache in a random population sample of 20-59 year olds. Spine, 20(17), 1884-1888. doi:10.1097/00007632-199509000-00008
12. Younis N , Afzal MW , Ahmad A , Ghafoor I , Waqas MS . Prevalence of work related neck pain in computer operators. Rawal Medical Journal. 2017;42(3):344–6.
13. Khilji M, Mufti R, Shakeel A, Ali W, Ishfaq H and Jan MBA. Frequency of cervicogenic headache among students of Rehman Medical Institute, Peshawar Khyber Pakhtunkhwa.
14. Rehman J Health Sci. 2019; 1(1):6-8
15. Racicki, S., Gerwin, S., DiClaudio, S., Reinmann, S., & Donaldson, M. (2013). Conservative physical therapy management for the treatment of cervicogenic headache: a systematic review.
16. Journal of manual & manipulative therapy, 21(2), 113-124.
17. Park, S. K., Yang, D. J., Kim, J. H., Heo, J. W., Uhm, Y. H., & Yoon, J. H. (2017). Analysis of mechanical properties of cervical muscles in patients with cervicogenic headache. Journal of physical therapy science, 29(2), 332-335.